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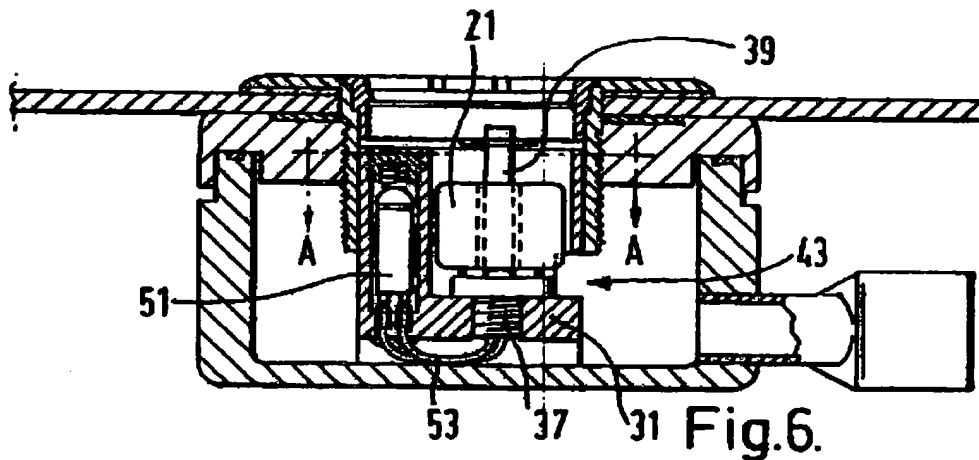
A4N NSA
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U1S S1713

(56) Documents Cited**GB 2294636 A****(58) Field of Search**

UK CL (Edition S) A4N NSA N3FX
INT CL⁷ A47K 3/40, E03C 1/12
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(54) Abstract Title**Apparatus for draining a shower tray**

(57) Apparatus for draining a shower tray comprises a pump controlled by a switch unit operable by a float (21) housed within a gully mounted on the underside of the shower tray. Preferably, the switch incorporates a transmitter (51) for causing the latter to transmit a wireless signal when the float is in an upper position, the signal, in turn, causing activation of the pump.

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1/7

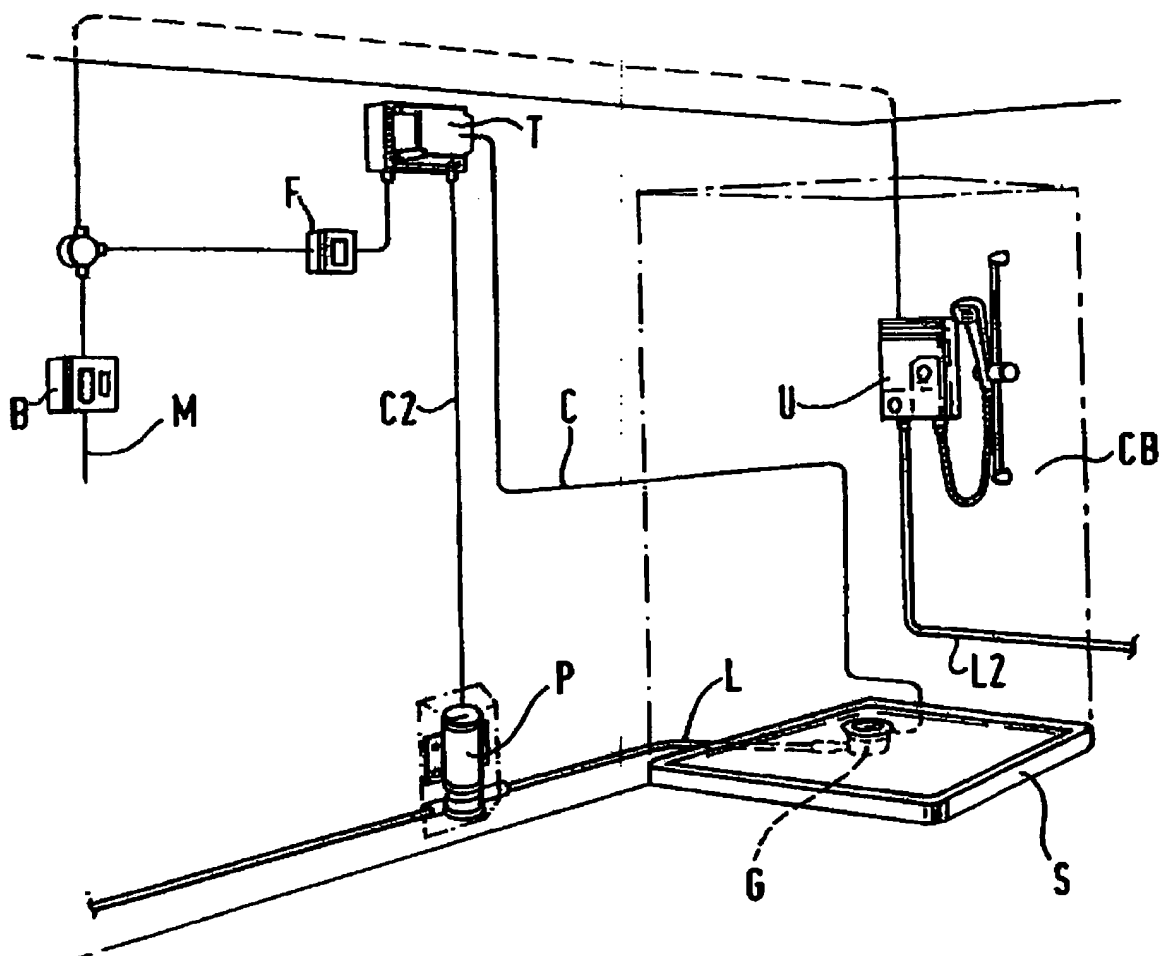


Fig.1.

2/7

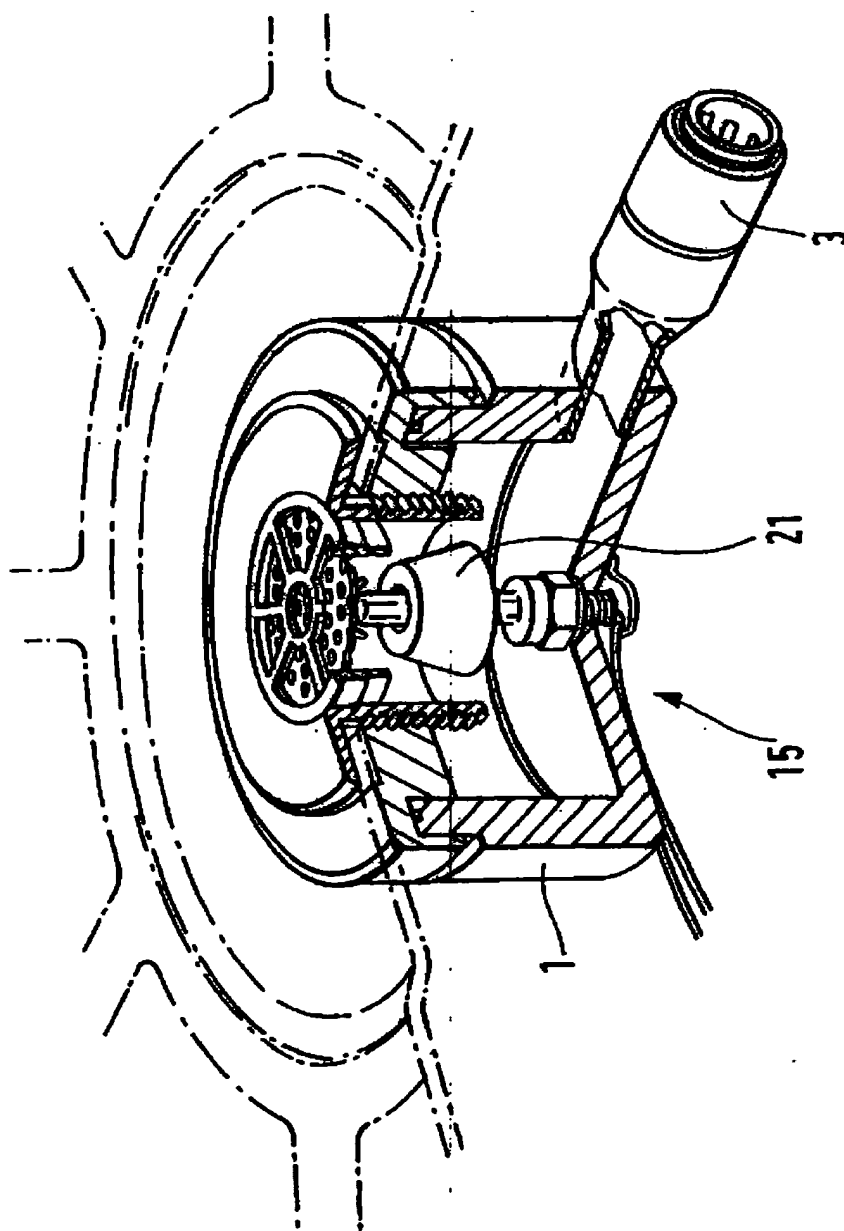


Fig.2.

3/7

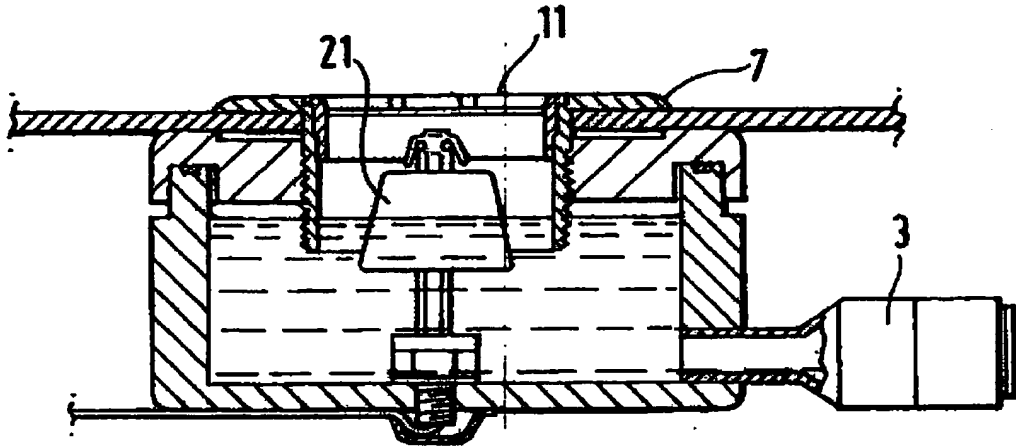


Fig.3.

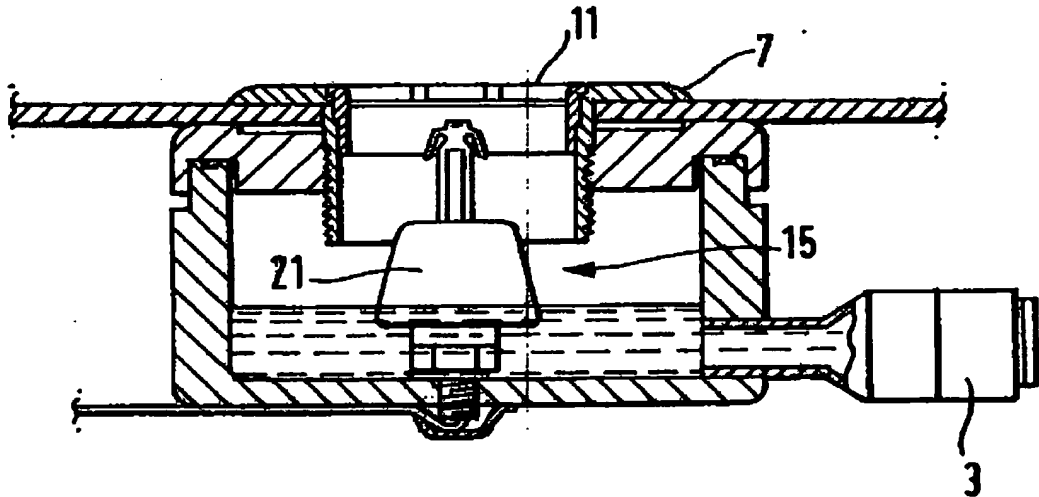


Fig.4.

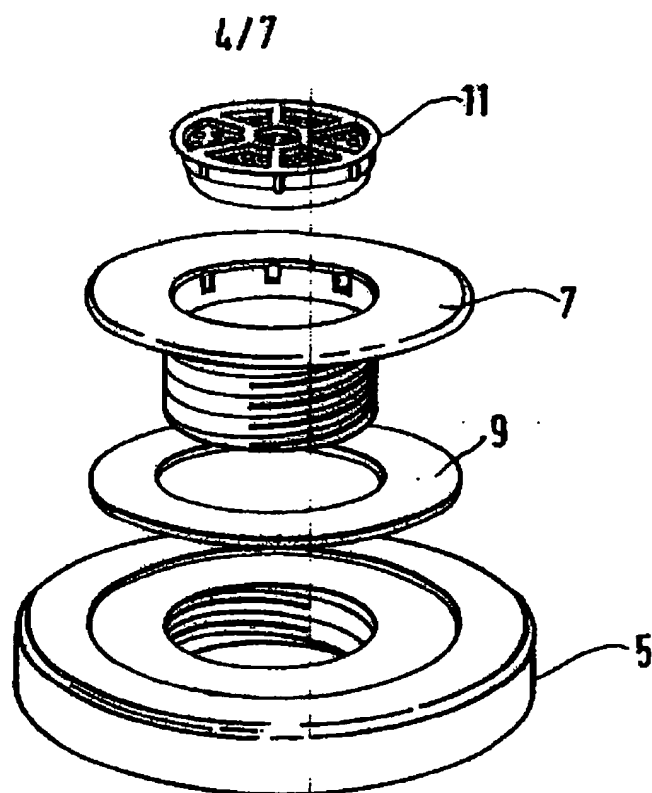
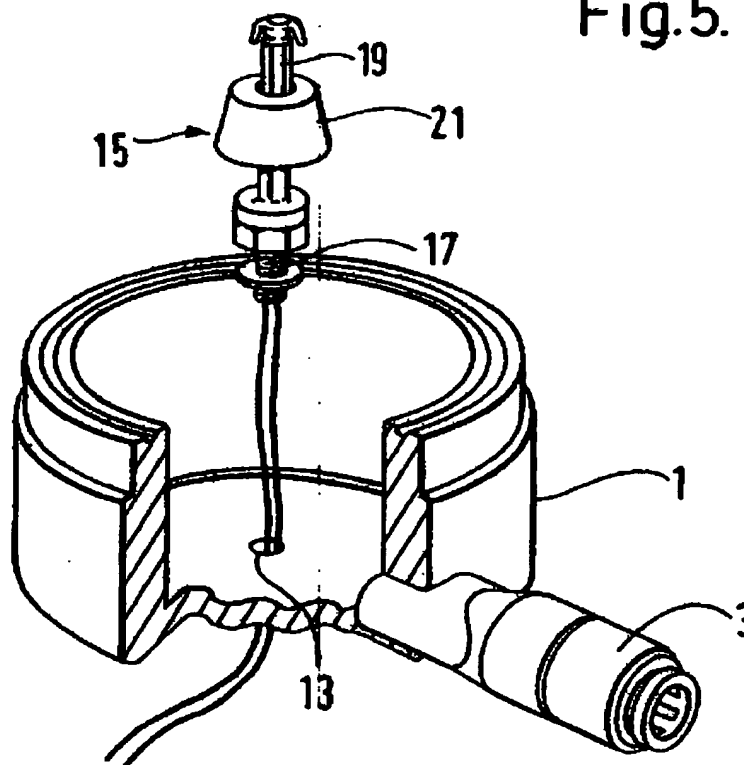


Fig.5.



5/7

Fig. 7.

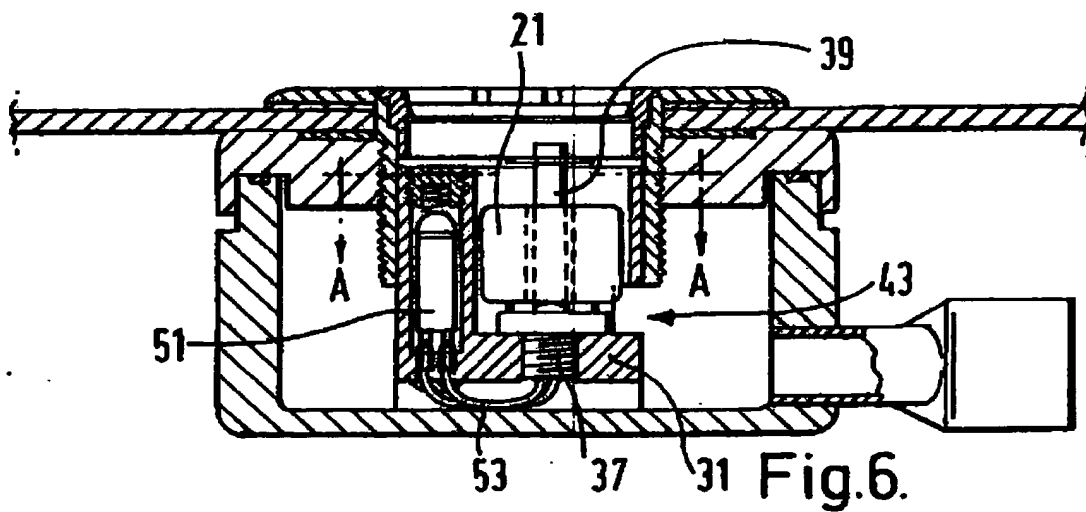
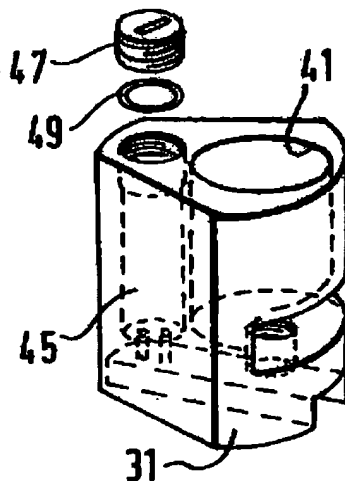
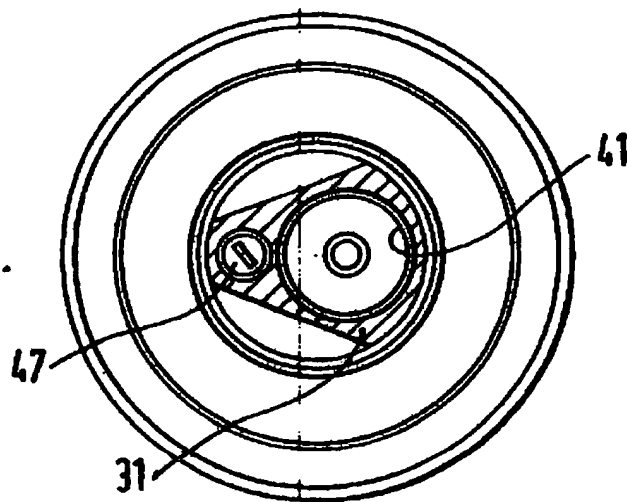


Fig. 6.

Fig. 8.



6/7

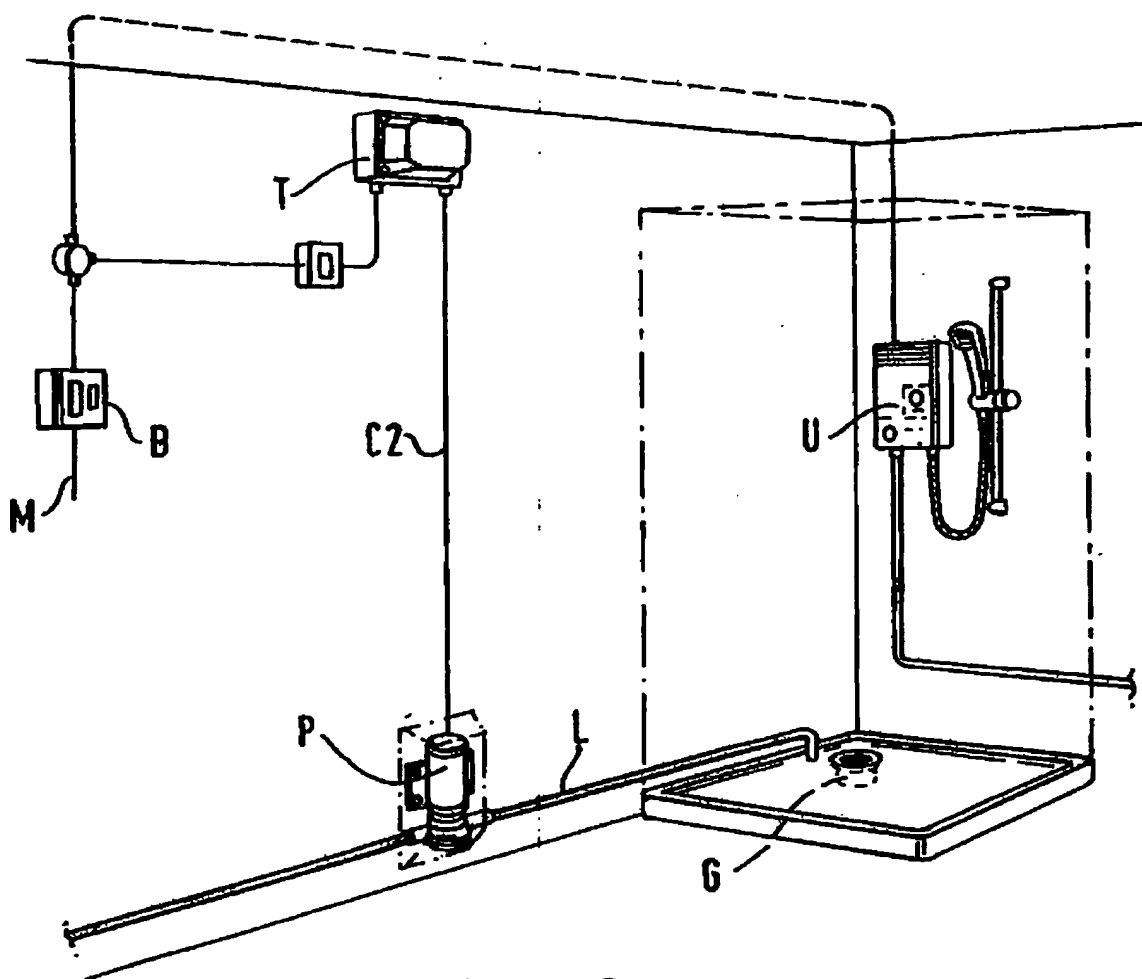


Fig.10.

7/7

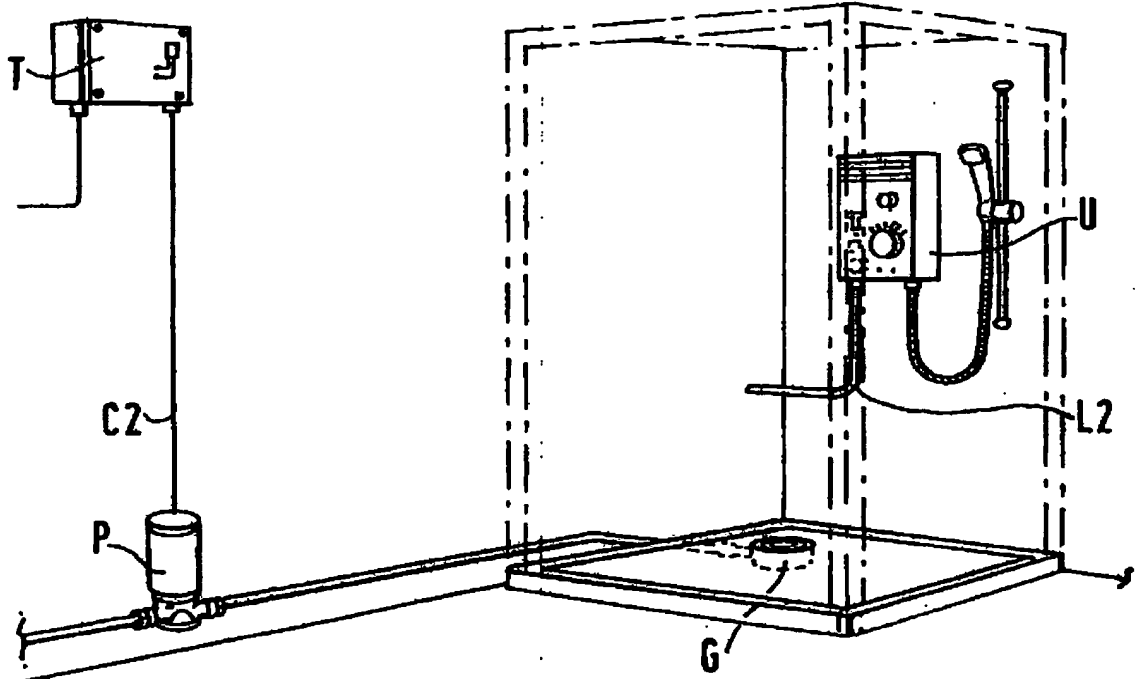


Fig. 11.

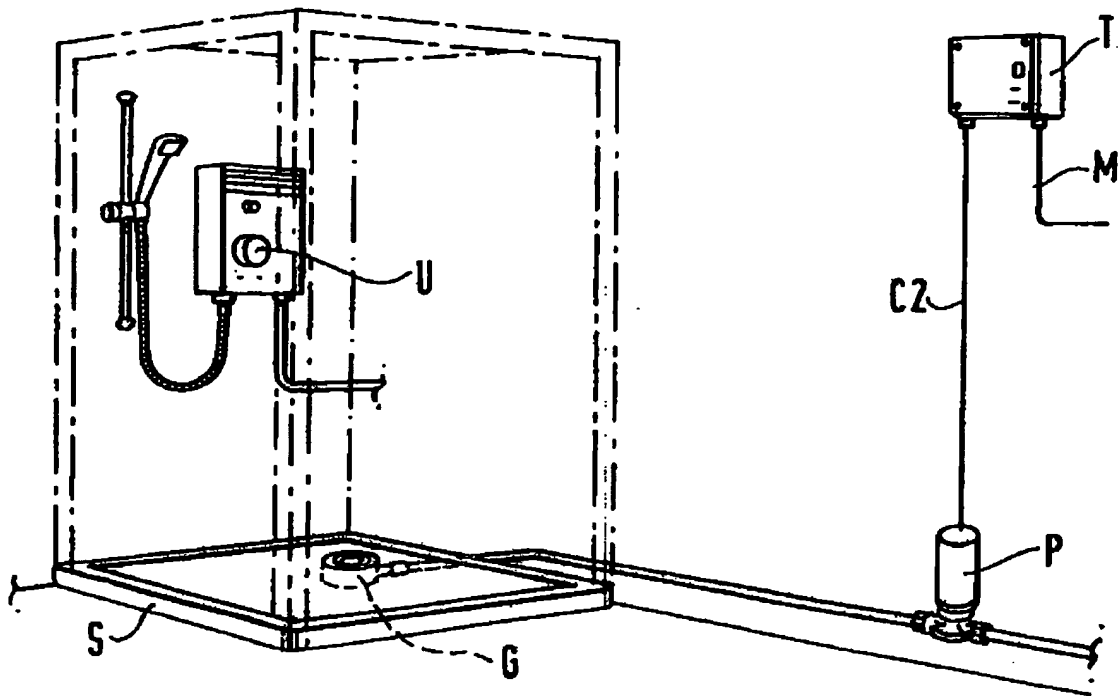


Fig. 9.

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1

IMPROVEMENTS IN SHOWER INSTALLATIONS

A typical shower installation includes a tray having an outlet into a gully leading to a waste pipe. The outlet is provided with a strainer to prevent loose material entering and blocking the gully or waste pipe. If the waste pipe has a long horizontal run, or is otherwise unable to cope with the flow from the shower tray, it is desirable to provide a pump downstream of the gully. The pump should be so controlled that it does not run dry, but the known systems for controlling the operation of the pump have not proved satisfactory.

The system described herein and illustrated in the drawings overcomes this problem, and comprises an arrangement for controlling a pump in a waste pipe of a shower tray, including a gully on or to be mounted on the underside of the shower tray, an outlet from the gully, and a switch unit operable by a float housed within the gully.

The invention includes various other aspects as will appear from the following description of various alternative systems.

In the drawings:

Figure 1 is a diagram to illustrate the overall system,

Figure 2 is a partly sectioned perspective view of the gully with the switch unit in place,

Figure 3 is a vertical section showing the switch unit

2

in its "on" condition,

Figure 4 is a view similar to Figure 3 but showing the switch unit in its "off" condition,

Figure 5 is an exploded perspective view of a gully and the parts of a first embodiment of switch unit for installation in the gully,

Figure 6 is an axial section through a gully fitted with a second embodiment of switch unit,

Figure 7 is a perspective view of the body of the switch unit,

Figure 8 is a section on line A-A in Figure 6,

Figure 9 is a diagram to illustrate the overall system using the second embodiment,

Figure 10 is a diagram showing a modified arrangement, and

Figure 11 is a diagram showing a system incorporating a third embodiment.

Referring first to Figure 1, a shower installation comprises a shower tray S beneath which is located a gully G through which waste water collecting in the tray is fed to an outlet pipeline L. The tray is surmounted by a cabinet CB within which is disposed a shower unit U supplied with water through a pipeline L2 and connected to the mains electrical supply M. The

3

shower unit heats the water passing through it, the water being discharged through a sprayhead in the usual way. A pump P is disposed in the pipeline L and receives electrical current from a transformer T through a cable C2. The transformer is connected through a main switchbox B and a 5 amp fuse F to the mains supply M. The transformer incorporates a switch unit for controlling the operation of the pump in response to a signal supplied along cable C from a switch unit in the gulley.

Referring to Figure 2, the gulley G includes a cup-shaped base 1 having a bottom and a peripheral wall receiving an outlet 3. The peripheral wall is secured to a cap 5 having a central, screw-threaded inlet opening. During installation of a shower tray, the gulley is offered up to the underside of the tray and secured in place by screwing a tubular retainer 7 into the inlet opening. An annular flange on the gulley retainer bears against the upper surface of the shower tray around the edge of the outlet. Seal rings 9 are provided between the gulley and tray, and between the retainer and tray. A removable strainer 11 fits within the mouth of the retainer. It is within the scope of the invention for the gulley to be integral with the base of the shower tray.

In accordance with the invention, the bottom of the gulley base has a bore 13 into which is fitted a switch unit 15.

The switch unit includes a hollow, screw threaded spigot 17 which is screwed into the opening 13 and an upwardly

4

extending shaft 19 on which is slidable a float 21. The travel of the float is limited by stops at the ends of the shaft.

Switch contacts (not shown) are closed when the float is in its upper position shown in Figure 3, and open when the float is in its lower position shown in Figure 4. The wires leading to the switch contacts pass through the spigot to the underside of the shower tray. The wires extend from the underside of the tray by way of cable C to the variable voltage transformer T used to supply current to the motor of the pump P which draws water from the gully through pipeline L. As the water level rises in the gully, the switch contacts are closed so that current flows in the circuit to the switch unit and of a relay associated with the transformer. A circuit to the pump motor is closed and the pump started. When the water level in the gully falls, the switch is opened and the pump is switched off. Operation is such that the level of water in the gully does not fall below that of the outlet 3. Consequently the pump P can never run dry.

A second embodiment is shown in Figures 6 to 8, and includes a switch unit having a body 31 with a bottom portion provided with a screw threaded bore. A float 35 slides on a shaft 39 having a screw threaded spindle screwed into the bore. The float is housed within a cylindrical chamber 41, into the lower end of which opens a slot 43. Extending parallel to chamber 41 is a bore 45 closed at its upper end by a plug 47 and 'O' ring 49. A transmitter unit 51 incorporating a battery is housed in bore 45 and connected to wires 53 leading

5

from the switch. The point of entry of the wires to the bore is closed with sealant. The switch unit is a sliding fit within the gully and may be rotated about the gully axis in order to select a position for the transmitter. In both described embodiments, the switch unit may be unscrewed and extracted after removing the strainer, thereby permitting cleaning and replacement of the unit as a whole or of the battery or other parts. A suitable seal arrangement is provided on the underside of the gully to prevent escape of water during maintenance of the first embodiment. There is no opening through the underside of the gully in the second embodiment.

In an alternative arrangement, shown in Figure 9, in which the same reference letters are used to indicate the same parts as in Figure 1 (where provided), the switch contacts of the switch unit in the gulley G are in circuit with a battery powered transmitter located within the switch unit and adapted to transmit a wireless signal at a suitable frequency. The transformer T incorporates a receiver tuned to the signal and arranged to operate the switch in the power line to the pump P.

In another arrangement shown in Figure 10, wherein again the parts of the installation (when provided) are indicated by the same reference letters as in Figure 1, the pipe line L to the pump P opens downwardly into the shower tray and the switch is incorporated into a housing G which replaces the gulley and is fitted on the upper side of the tray so as to monitor water level in the tray and transmit a wireless signal to the receiver

6

associated with the transformer T when the pump is required to be started to reduce the water level. The housing G in Figure 10 therefore plays no part in channelling water to the pump P.

In a further arrangement shown in Figure 11, wherein again the parts of the installation (when provided) are indicated by the same reference letters as in Figure 1, a transmitter incorporated into the shower unit U is arranged to transmit a wireless signal to a receiver associated with the transformer T in response to operation of an inlet valve of the shower unit itself. The transmitter may alternatively be associated with a flow responsive switch in the pipe line L2 feeding the shower unit. In either case, the pump P is actuated as water is discharged into the shower tray. A standard gully is used with either of these arrangements.

In any embodiment, instead of using a float on a vertical shaft, the switch unit may include a float slidable against the chamber wall or supported on a pivoted arm.

Any suitable transmitting medium may be used to send a signal from the switch to the transformer, including optical fibres and wireless signals of any suitable frequency.

Although it is simpler and more reliable for the transmitter to transmit a continuous signal while the water is at its upper level, it falls within the scope of the invention for the transmitter to transmit separate "close" and "open" signals.

7

The drawings as filed with this application are annotated, and regard should be had to these annotations insofar as they provide further information concerning the construction and operation of the system.

8

CLAIMS

1. An arrangement for controlling a pump in a waste pipe of a shower tray, including a gully on or to be mounted on the underside of the shower tray, an outlet from the gully, and a switch unit operable by a float housed within the gully.
2. An arrangement for controlling a pump in a waste pipe of a shower tray, including a float-operated switch responsive to the level of water in the shower tray or in a gully associated with the shower tray, means responsive to operation of the switch for transmitting a signal to a receiver associated with a switch in the circuit of the pump motor.
3. An arrangement for controlling a pump in a waste pipe of a shower tray, including a transmitter adapted to transmit a wireless signal during operation of a shower unit, a receiver being adapted to receive the signal, a switch controlling operation of the pump, and means for closing said switch upon the receiver receiving said signal.
4. A switch unit for insertion into a gully of a shower tray, the switch unit including a body having a float chamber and a transmitter chamber, a float movable within the float chamber, a switch operable by the float, the switch being connected to the transmitter for causing the latter to transmit a wireless signal when the float is in an upper position.
5. A gully of or for a shower tray incorporating a

9

switch unit as claimed in claim 4.

6. A shower installation substantially as hereinbefore described with reference to Figure 1 or any of Figure 3 9 to 11 of the drawings.

7. A gully for a shower installation substantially as hereinbefore described with reference to and as illustrated in Figures 2 to 5 or Figures 6 to 8 of the drawings.



Application No: GB 0020688.8
 Claims searched: 1

Examiner: D. Haworth
 Date of search: 20 February 2001

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:
 UK CI (Ed.S): A4N (NSA)
 Int CI (Ed.7): A47K 3/40; E03C 1/12
 Other: Online: WPI, EPODOC, PAJ

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X	GB 2294636 A (Gontar)	1

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Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
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